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CLAIMS:

What is claimed is:

1. A method of performing virtual-to-real address translations in a data processing device, comprising:
 - receiving a virtual address for accessing a location of memory, wherein the virtual address includes a segment identifier;
 - performing a segment table lookup based on the segment identifier to identify a segment table entry;
 - determining if the segment is a pre-translated segment based on the segment table entry; and
 - generating a real address for accessing a memory location corresponding to the virtual address based on a segment base real address identified in the segment table entry, if the segment is a pre-translated segment.
2. The method of claim 1, wherein if the segment is not a pre-translated segment, the method further comprises:
 - performing a lookup of the virtual address in at least one of a translation lookaside buffer and a page table to thereby generate a real address for accessing a memory location corresponding to the virtual address.
3. The method of claim 1, wherein determining if the segment is a pre-translated segment based on the segment table entry includes determining if a pre-translated segment flag field in the segment table entry has a

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particular value indicative of the segment being a pre-translated segment.

4. The method of claim 1, wherein determining if the segment is a pre-translated segment based on the segment table entry includes determining if a segment base real address field has a base real address stored therein.

5. The method of claim 1, wherein generating a real address for accessing a memory location corresponding to the virtual address based on the segment base real address includes:

concatenating a segment base real address identified in the segment table entry for the segment with a page identifier of a page within the segment and a byte offset into the page.

6. The method of claim 5, wherein the segment base real address and the page identifier are concatenated by a first adder in translation hardware, and wherein a result of the concatenation of the segment base real address and the page identifier is concatenated with the byte offset into the page by a second adder in the translation hardware.

7. The method of claim 1, wherein the segment is a pre-translated segment if the segment may be wholly accessed.

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8. The method of claim 1, wherein the segment is a pre-translated segment if the segment has a density greater than a tunable threshold density.

9. A computer program product in a computer readable medium for performing virtual-to-real address translations in a data processing device, comprising:

first instructions for receiving a virtual address for accessing a location of memory, wherein the virtual address includes a segment identifier;

second instructions for performing a segment table lookup based on the segment identifier to identify a segment table entry;

third instructions for determining if the segment is a pre-translated segment based on the segment table entry; and

fourth instructions for generating a real address for accessing a memory location corresponding to the virtual address based on a segment base real address identified in the segment table entry, if the segment is a pre-translated segment.

10. The computer program product of claim 9, wherein the third instructions for determining if the segment is a pre-translated segment based on the segment table entry include instructions for determining if a pre-translated segment flag field in the segment table entry has a particular value indicative of the segment being a pre-translated segment.

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11. The computer program product of claim 9, wherein the third instructions for determining if the segment is a pre-translated segment based on the segment table entry include instructions for determining if a segment base real address field has a base real address stored therein.

12. The computer program product of claim 9, wherein the fourth instructions for generating a real address for accessing a memory location corresponding to the virtual address based on the segment base real address include:

instructions for concatenating a segment base real address identified in the segment table entry for the segment with a page identifier of a page within the segment and a byte offset into the page.

13. The computer program product of claim 9, wherein the segment is a pre-translated segment if the segment may be wholly accessed.

14. The computer program product of claim 9, wherein the segment is a pre-translated segment if the segment has a density greater than a tunable threshold density.

15. An apparatus for performing virtual-to-real address translations in a data processing device, comprising:

means for receiving a virtual address for accessing a location of memory, wherein the virtual address includes a segment identifier;

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means for performing a segment table lookup based on the segment identifier to identify a segment table entry;

means for determining if the segment is a pre-translated segment based on the segment table entry; and

means for generating a real address for accessing a memory location corresponding to the virtual address based on a segment base real address identified in the segment table entry, if the segment is a pre-translated segment.

16. The apparatus of claim 15, wherein the means for determining if the segment is a pre-translated segment based on the segment table entry includes means for determining if a pre-translated segment flag field in the segment table entry has a particular value indicative of the segment being a pre-translated segment.

17. The apparatus of claim 15, wherein the means for determining if the segment is a pre-translated segment based on the segment table entry includes means for determining if a segment base real address field has a base real address stored therein.

18. The apparatus of claim 15, wherein the means for generating a real address for accessing a memory location corresponding to the virtual address based on the segment base real address includes:

means for concatenating a segment base real address identified in the segment table entry for the segment

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with a page identifier of a page within the segment and a byte offset into the page.

19. The apparatus of claim 18, wherein the means for concatenating includes a first adder and a second adder in translation hardware, and wherein the segment base real address and the page identifier are concatenated by the first adder in the translation hardware, and wherein a result of the concatenation of the segment base real address and the page identifier is concatenated with the byte offset into the page by the second adder in the translation hardware.

20. The apparatus of claim 15, wherein the segment is a pre-translated segment if the segment has a density greater than a tunable threshold density.